'Pitch accent' and prosodic structure in Scottish Gaelic: historical implications

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Pavel Iosad
Universitetet i Tromsø/CASTL
pavel.iosad@uit.no

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Plan

- Discuss Scottish Gaelic as a "pitch accent" language
- Discuss pitch accent as the expression of prosodic structure
- Argue that all the ingredients for Scottish Gaelic pitch accents have internal motivation
- Convince you that contact with North Germanic is not necessary to explain the appearance of accents in Scottish Gaelic

Between tone and stress

- We start with these definitions by Hyman (2006)
- "A language with tone is one in which an indication of pitch enters into the lexical realization of at least some morphemes"
- "A language with stress accent is one in which there is an indication of word-level metrical structure meeting the following two central criteria:
  1. *Obligatoriness*: every lexical word has at least one syllable marked for the highest degree of metrical prominence (primary stress);
  2. *Culminativity*: every lexical word has at most one syllable marked for the highest degree of metrical prominence.

"Pitch accent" languages

- An intermediate type
- Many definitions: see van der Hulst (2011)
- For our purposes: a language with lexical restrictions on the tonal expression of stress accent
- Basically, any language which can be described as having "accent 1" and "accent 2"
- Such as mainland North Germanic

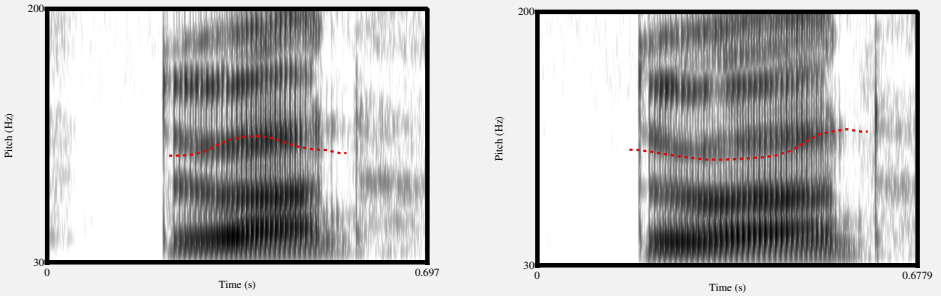
Representing pitch accents

- All sorts of controversy
- Relationship of tone to stress accent: which comes first?
- Which of the two accents is marked? Which is default?
- Is the tone specified lexically or is it assigned top-down by the intonational system?
- What about *stød*?
- Is "pitch accent" even a thing?
- Preview: no (Hyman 2006, 2009)

The data

- In Scottish Gaelic dialects, words can differ only in their tonal contours

['tuan] 'hook' (*dubhan*) ['tuan] 'song' (*duan*)



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Interpretation I

- Early vs. late H peak (or rise-fall vs. rise)
- Does indeed look a lot like North Germanic
- Explicitly analysed in terms of "accent 1" and "accent 2" by Ternes (1973, 2006)
- Found in most Scottish dialects:
  - Outer Hebrides (Borgstrøm 1940; Oftedal 1956; Watson 2010)
  - Western part of the mainland (Borgstrøm 1941; Ternes 2006; Wentworth 2005)
  - Eastern dialects (Dorian 1978)

Interpretation II

- Remarkably, in southern dialects words that differ in terms of tone elsewhere use glottal stops (Holmer 1938; Ternes 1980)

(1) a. Lewis (Outer Hebrides)

(i)	[^{1}'po:]	'underwater rock'
(ii)	[^{2}'po:]	'cow'

b. Tiree (Inner Hebrides)

(i)	['poʔɔ]	'underwater rock'
(ii)	['po:]	'cow'

- Does that look familiar?

Historical aspects

- It is reasonably clear that the "pitch accents" are historically related to the number of syllables
  - Lewis [^{1}ˈpoː], Tiree [ˈpoʔɔ] 'underwater rock', written *bodha* ← Norse *boði*
  - Lewis [^{2}ˈpoː], Tiree [ˈpoː] 'cow', written *bò* ← Old Irish *bó*
- Also similar to North Germanic
- We return below to whether there is a historical connection
- But how do we analyse this synchronically?

Preview of the argument

- "Pitch accent" in Scottish Gaelic, as in several other languages, is related to syllable count not just historically, but also synchronically
- Differences in pitch and/or glottal activity are the phonetic expression of a difference in prosodic structure which derives from underlying contrasts
- Both underlying prosodic structure and the expression of lexical prosodic structure in terms of pitch are independently found in Celtic
- Ergo: there is no necessary historical link between "pitch accents" in Scottish and in North Germanic
- ...although of course it cannot be excluded

The phonetics of pitch accents

- The phonetics of "pitch accents" (e. g. Bruce 1977):
  - Boundary tones
  - Intonational accents (e. g. focus marking)
  - ...and perhaps lexical tones
- Many options for representing accent types (e. g. Gussenhoven 2004)
  - Equipollent: different lexical tones
  - Privative: lexical tone vs. default tone
  - Privative: lexical tone vs. no tone (i. e. only boundary tones and intonational accents)
  - Structural: no lexical tone
- ...wait, what?

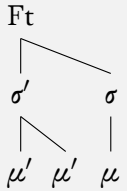
Pitch accent without lexical tone

- Recent approaches:
  - North Germanic: Morén (2003, 2008)
  - Franconian Tone Area: Köhnlein (2011)
- Only boundary tones, intonation and a way to make tones land on heads of prosodic constituents (≈ the star in the standard notation)
- Differences between morphemes amount to underlying differences in prosodic structure
- One "accent" is unspecified, only boundary tones and intonational accents
- The other accent is specified prosodic structure (morification, syllabification, footing), with intonation taking this into account
- Distinctive moraicity unproblematic (lexical geminates), ditto distinctive footing (think Russian stress)
- Distinctive syllabification sometimes assumed not to exist, but cf. Vaux (2003)

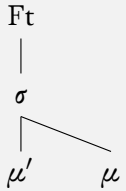
Arzbach I

- According to Köhnlein (2011)
- Two types of accents (“accent 1” and “accent 2”).

Accent 1: disyllabic foot



Accent 2: monosyllabic foot



- Phonology (simplified): no L tones on head morae
- This, plus intonation, gives the different melodies
- No lexical tone necessary anywhere
- Unmarked case: phonology responsible for footing

Arzbach II

- Uneven trochees are dispreferred, so normally we just build a (H) foot, giving accent 2

(2) a. $[^{2}(\text{ˈd̪auf})_{\text{Ft}}]$ ‘baptism’
b. $[^{2}(\text{ˈd̪au})_{\text{Ft}}\text{və}]$ ‘baptisms’

- Marked case: a word like [d̪auf] ‘pigeon’ is stored with foot structure (disyllabic foot, possibly with an empty nucleus), which gives accent 1:

(3) a. $[^{1}(\text{ˈd̪auf\_})_{\text{Ft}}]$ ‘pigeon’
b. $[^{1}(\text{ˈd̪auvə})_{\text{Ft}}]$ ‘pigeons’

Arzbach III

- The disyllabic foot can have other sources, such as a morpheme

(4) a. $[^{2}(\text{ˈʃtaɪn})_{\text{Ft}}]$ ‘stone’ ⇐ default footing
b. $[^{1}(\text{ˈʃtaɪn\_})_{\text{Ft}}]$‘stones’ ⇐ [ʃtaɪn] + $(\sigma\sigma)_{\text{Ft}}$

☞ If this analysis is correct, we expect the melodies to be contingent on intonation, position in the phrase etc.

- Which is of course described for both Franconian/Limburg varieties and North Germanic

Back to Scotland

- Following Oftedal (1956); Ladefoged et al. (1998), I suggest that the Scottish Gaelic “pitch accents” are, at least historically/in some dialects, purely a function of underlying syllabification (also Smith 1999; Hall 2006)
- Going back to ^{1}*dubhan* ‘hook’ vs. ^{2}*duan* ‘song’
- Accent 1: disyllabic, early H timing (= rise-fall)
- Accent 2: monosyllabic, late H timing (= rise, no fall)

☞ Scottish Gaelic stress is overwhelmingly initial

- H* is timed towards the end of the stressed syllable
- Reproduces diachrony: Old Irish *dubán* ‘hook’, *dúan* ‘song, poem’
- Why this analysis? I’m glad you asked

Svarabhakti vowels in Goidelic

- The basic rule: insert a vowel between C_1 and C_2 if C_1 is a sonorant, unless C_2 is a fortis stop or C_1 and C_2 are homorganic

(5)

a.	[ˈalˠapə]	‘Scotland’
b.	[ˈfarˠakʲə]	‘sea’
c.	[ˈkãnãvhɔx]	‘sand’

- In Hebridean dialects, or at least on Lewis, the epenthetic vowel is always a copy of the preceding vowel
- In other Scottish dialects (towards the south) the vowel may be a copy *modulo* backness which comes from the consonant
- In Irish, the epenthetic vowel is normally [ə]/[ɪ]

Svarabhakti and syllable structure: Irish I

- In Irish, svarabhakti vowels are normal syllable nuclei
- They participate in mora- and syllable-counting processes
- Ní Chiosáin (1999): svarabhakti is blocked after a non-final binary foot, but improves footing when there is not enough segmental material for this optimal structure

(6)

a.	[(ˈarʲɪ)gʲəd]	‘money’
b.	[(ˈtarəv)]	‘bull’

but

(7)

a.	[(ˈt̪eːr_)mə]	‘term’
b.	[(ˈduəl_)gəs]	‘duty’

Svarabhakti and syllable structure: Irish II

- Green (1997); Ó Sé (1989, 2008): svarabhakti vowels count for the three-syllable window in Munster Irish stress
- Stress falls on heavy syllables within a three-syllable window, otherwise initial stress
- Svarabhakti can push a long vowel outside the three-syllable window

(8)

a.	[kʲanəˈhoːrʲ]	‘buyer’
b.	[ˈimʲɪlʲəkaːn]	‘navel’
c.	*[imʲɪlʲəˈkaːn]	

Svarabhakti and syllabic structure: Scottish I

- Plenty of evidence that the svarabhakti vowel does not project a syllable
- Speaker intuitions (Borgstrøm 1940; Oftedal 1956) (for what it’s worth)
- Lack of vowel reduction (Oftedal 1956):

(9) [ˈɯrɯxər] ‘shot’

Svarabhakti and syllabic structure: Scottish II

- The consonant before the epenthetic vowel counts as a coda: Argyllshire dialects (data from Holmer 1938, analysis by Smith 1999)

(10) Light stressed syllables epenthesize [ʔ] to achieve bimoraicity

a. [ˈkʰa$_\mu$⟨ʔ⟩$_\mu$raxəɣ] ‘move’
b. [ˈu$_\mu$⟨ʔ⟩$_\mu$] ‘egg’

(11) Heavy ones don’t

[ˈtʰra$_\mu$i$_\mu$] ‘beach’

(12) Consonant counts for coda weight

a. [ˈma$_\mu$r$_\mu$av] ‘dead’
b. *[ˈma$_\mu$⟨ʔ⟩$_\mu$rav]

Svarabhakti and syllabic structure: Scottish III

- Syncope is used to prevent lapse, but does not affect epenthetic vowels (Smith 1999)

(13)

a.	(i)	[ˈobəðʲ]	‘work’
	(ii)	[ˈobrəx]	‘work (gen. sg.)’
	(iii)	*[ˈobərəx]	
b.	(i)	[ˈbalˠəx]	‘boy’
	(ii)	[ˈvalˠaxu]	‘boy (voc. pl.)’
	(iii)	*[ˈvalˠxu]	

Svarabhakti and syllabic structure: Scottish IV

- Palatalization: fronting and/or raising of vowels, palatalization of consonants
- Affects the rhyme of the final syllable, stopping short of the onset

(14)

a.	(i)	[ˈlˠɯːɣ]	‘calf’
	(ii)	[ˈlˠʊiː]	‘calf (gen. sg.)’
b.	(i)	[ˈpalˠəx]	‘boy’
	(ii)	[ˈpalˠɪç]	‘boy (gen. sg.)’

- But with svarabhakti

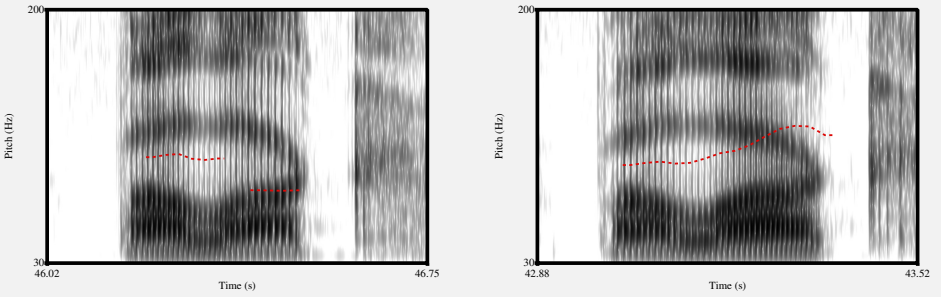
(15)

a.	[ˈtɔrɔɣ]	‘fishing line’
b.	[ˈtuðʲʊj]	‘fishing lines’
c.	*[ˈtoruj]	

Svarabhakti and syllabic structure: Scottish V

- Finally, svarabhakti and non-svarabhakti words exhibit the same pitch accent contrast.

[ˈpalˠak] ‘skull’ (*ballag*) [ˈpalˠak] ‘belly’ (*balg*)



Svarabhakti and syllabic structure: Scottish VI

- Again, the simplest analysis is this:
- [ˈ[1]palʏak] ‘skull’ is disyllabic
- [ˈ[2]palʏak] ‘belly’ is monosyllabic
- H* times to the right of the syllable
- Probably not to morae, because Argyllshire [ʔ] insertion shows that the consonant is moraic, but H* goes further to the right
- Although of course these are different varieties...

Svarabhakti and syllabic structure: Scottish VII

- Literature:
  - Oftedal (1956): words with svarabhakti are phonological monosyllables
  - Ladefoged et al. (1998): this is what I follow
  - Smith (1999): epenthetic vowels do not project (maximal) syllables
  - Gestural analyses with various degrees of phonologization: Hind (1996); Hall (2006)
  - See also Bosch & de Jong (1997)
- See an overview of other analyses in Bosch (2010)
- Ask me why they don’t work

Pitch accents in Scottish Gaelic: conclusion

- There are none
- The difference between “accent 1” and “accent 2” is only a function of prosodic structure and the timing of the tone

☞ Don’t we expect the accent tunes to change with intonation?

- Apparently they may (Ternes 2006, p. 140); further study needed.

Key conclusion

- There is nothing special about “pitch accent” (Hyman 2006, 2009)
- In Scottish Gaelic, it is just prosodic structure plus intonation

Background

- The context for all this is the Norse settlement in Scotland
  - Orkney and Shetland
  - Caithness
  - Western Isles
  - Inner Hebrides
  - Man
  - But not the Highlands to any significant extent
- Presumed language shift: Norse → Gaelic
- Historical sources sorely lacking (cf. Woolf 2007)
- Placename evidence (much ongoing research)

Linguistic contacts

- Norse borrowings (Stewart 2004; Cox 2010)
- Laryngeal phonology, especially preaspiration
  - Marstrander (1932); Oftedal (1947, 1956); Borgstrøm (1974); Helgason (2005); Hansson (2001): borrowing from Norse
  - Ó Baoill (1980); Ní Chasaide & Ó Dochartaigh (1984); Ó Murchú (1985); Ní Chasaide (1986); Ó Maolalaigh (2010): possible paths for internal development
- And so the pitch accents (especially Borgstrøm 1974)

The pitch accent recipe

- I have just argued that pitch accent in Scottish Gaelic represents:
  - Differences in prosodic structure
  - The expression of this structure by pitch
- Do we need Norse contact for either?
- I suggest we don't

Prosodic structure in Celtic I

- The facts of epenthesis submit to an analysis in terms of differences in prosodic structure even without reference to pitch accents

(16) Scottish

a.	(i)	['.palˠak.]	'belly'
	(ii)	['.pulukʲ.]	'bellies'
b.	(i)	['.pa.lˠax.]	'boy'
	(ii)	['.pa.lˠɪç]	'boys'

- Similar facts, without the pitch accents, are found, for instance, in Munster Irish (Ó Sé 2000)
- Which is about as far from Scotland as you can get

Prosodic structure in Celtic II

- The basic palatalization pattern is the same

(17)

a.	(i)	['brov]	'rush'
	(ii)	['brivʲ]	'rush (gen. sg.)'
b.	(i)	['knuk]	'hill'
	(ii)	['knikʲ]	'hill (gen. sg.)'

- In polysyllabic words, both patterns are possible, although they often do not reproduce history

(18) Examples with historical epenthesis

a.	(i)	['bolǝg]	'belly'
	(ii)	['biʲɪgʲ]	'belly (gen. sg.)'
b.	(i)	['ʲanǝv]	'child'
	(ii)	['ʲinʲɪvʲ]	'child (gen. sg.)'

Prosodic structure in Celtic III

- Variation

(19) Examples with historical vowel

a.	(i)	[ˈsoləs]	‘light’
	(ii)	[ˈsolɪʃ]	‘light (gen. sg.)’
	(iii)	[ˈsiʲɪʃ]	
b.	(i)	[ˈdorəs]	‘door’
	(ii)	[ˈdirɪʃ]	‘door (gen. sg.)’
c.	(i)	[ˈkuːntəs]	‘count’
	(ii)	[ˈkuːntɪʃiː]	‘counts’

- I suggest the existence of the Munster Irish examples shows that the contrast between mono- and polysyllables can be sustained even without the gestural and pitch cues
- We saw that in Irish the epenthetic vowel ended up being a normal syllable nucleus

Prosodic structure in Celtic IV

- However, this does not necessarily mean that the underlying contrast between /soləs/ and /lʲanv/ was gone when the epenthesis facts ceased to hold
- Admittedly the modern system is much messier
- But I suggest it shows that Goidelic languages are perfectly able to persevere with the contrast between underlying CVCC and CVCəC structures
- Aren’t these just inherited from Old Irish? Well, yes, but then this is also true of Scottish

Pitch elsewhere in Celtic

- Traditionally, the other “Celtic language with pitch” is Welsh
- See Pilch (1975) for an elaborate structuralist description
- Also Thomas (1967); Rhys (1984); Bosch (1996); Williams (1999); Ball & Williams (2001)
- Pitch is heavily implicated in the expression of stress and intonation
- But no lexical contrasts
- Are there other examples?
- Yes

“Double stress” in Breton I

- Breton dialect of Bothoa
- East-central Brittany (no Vikings in sight...)
- Source: Humphreys (1995)
- Contrast between two types of disyllabic words, written as one stress versus a two-stress pattern

(20)

a.	[ˈparuz̥]	‘parish’
b.	[ˈdaˌvad̥]	‘ewe’

- “Double-stressed” words are characterized by rising pitch on the second syllable and relatively long duration (in fact said to sound like Welsh)
- Humphreys (1995) explicitly compares the contrast to the North Germanic accents
- I suggest it is (again) prosodic structure

“Double stress” in Breton II

- Single-stress: no underlying structure, default footing, no alternations expected

(21) a. [ˈparuʒ̥] ‘parish’
b. [ˈparuʒəw] ‘parishes’

- Double-stress: two feet underlyingly
- Prediction: in the language at large, in words with more than one foot (weight-to-stress, lexically stressed suffixes) main stress falls on the rightmost bimoraic foot:

(22) a. [ˌhyːˈaːl] ‘hindrance’
b. [ˌʃyːˈbadər] ‘rubbish’

- We expect the same with double-stressed words

(23) a. [ˈdaˌvaɖ] ‘ewe’

“Double stress” in Breton III

b. [ˌdaˈvadəw] ‘sheep’

- Further confirmation of underlying footing: secondary stress on light syllables is rare (not to say exceptional), cannot be coerced by the phonology: therefore must be underlying in [ˌdaˈvadəw]
- ☞ Pitch can express prosodic structure without Viking interference
- We know this from the Franconian tone area by now
- Ask me about the history of Bothoa prosody

Summing up

- Both ingredients for a Scottish-type “pitch accent” can arise without external influence
- There is nothing extraordinary about Scottish accents that requires a contact explanation
- Can we rule out a rôle for contact with Norse?
- Of course we cannot
- But many of the contact arguments are a bit circular, because we know so little about the actual history and rely on the linguistic evidence

Tapadh leibh!

Bonus: preaspiration

- How extraordinary is preaspiration?
- Less than previously thought, it would appear
  - Ulster Irish: Ní Chasaide & Ó Dochartaigh (1984)
  - Tyneside English: Docherty & Foulkes (1999)
  - Glasgow English: Gordeeva & Scobbie (2010)
  - Welsh: Morris (2010)
- Also: what is “preaspiration” (Kehrein & Golston 2004; Ó Maolalaigh 2010; Árnason 2011)?
- Although contrast Silverman (2003)

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